REMARKS

Claims 5 and 12 have been amended. New claims 15 and 16 have been added. Claims 1 through 16 remain in the application.

Claims 5 through 7 and 12 through 14 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 5 and 12 have been amended and rewritten in independent form to include the limitations of the base claim and any necessary supporting intervening claims. It is respectfully submitted that claims 5 through 7 and 12 through 14 are in a condition for allowance.

Claims 1 through 4 and 8 through 11 were rejected under 35 U.S.C. § 103 as being unpatentable over Wiley et al. (U.S. Patent No. 5,018,977) in view of Stopper (U.S. Patent No. 4,845,315). Applicant respectfully traverses this rejection.

U.S. Patent No. 5,018,977 to Wiley et al. discloses a motorcycle accident simulating test dummy. A test dummy 1 has a head means 7, neck means 8, body means 9, limb means 11, and joint means 18. The dummy 1 also includes a variety of test sensing means, such as first sensor means 23 operable to sense stress and/or strain imposed on the limb means 11, and a second sensor means 24 operable to sense stress and/or strain imposed on the joint means 18. Also, the dummy 1 includes a data receiving and storage means 25 operable to receive and store data signals from the first and second sensor means 23, 24. Leads 28 transmit signals from the first and second sensor means 23, 24 to the data receiving and storage means 25. Wiley does not disclose or suggest a plurality of flexible printed circuit cables electrically interconnecting sensors and at least one centralized data receiving unit to transmit electrical signals from the sensors to the at least one centralized data receiving unit.

U.S. Patent No. 4,845,315 to Stopper discloses a cable system. The system includes a variety of components including a flexible printed circuit. Stopper does not disclose or suggest at least one centralized data-receiving unit or a plurality of sensors arranged remotely from the at least one centralized data receiving unit to generate electrical signals of data pertaining to a vehicular collision.

In contradistinction, independent claim 1 claims the present invention as a flexible printed circuit cabling system for a crash test dummy including at least one centralized data-receiving unit and a plurality of sensors arranged remotely from the at least one centralized data receiving unit to generate electrical signals of data pertaining to a vehicular collision. The flexible printed circuit cabling system also includes a plurality of flexible printed circuit cables electrically interconnecting the sensors and the at least one centralized data receiving unit to transmit the electrical signals from the sensors to the at least one centralized data receiving unit.

The United States Court of Appeals for the Federal Circuit (CAFC) has stated that in determining the propriety of a rejection under 35 U.S.C. § 103, it is well settled that the obviousness of an invention cannot be established by combining the teachings of the prior art absent some teaching, suggestion or incentive supporting the combination. See In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 221 U.S.P.Q. 929 (Fed. Cir. 1984). The law followed by our court of review and the Board of Patent Appeals and Interferences is that "[a] prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." In re Rinehart, 531 F.2d 1048, 1051, 189 U.S.P.Q. 143, 147 (C.C.P.A. 1976). See also In re Lalu, 747 F.2d 703, 705, 223 U.S.P.Q. 1257, 1258 (Fed. Cir. 1984) ("In determining whether a case of prima facie

obviousness exists, it is necessary to ascertain whether the prior art teachings would appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitution or other modification.")

None of the references cited, either alone or in combination with each other, teaches or suggests the claimed invention of claim 1. Specifically, Wiley '977 merely discloses a test dummy with sensor means, a data receiving and storage means, and leads interconnecting the sensor means and data receiving and storage means. Wiley '977 lacks a plurality of flexible printed circuit cables electrically interconnecting sensors and at least one centralized data receiving unit to transmit electrical signals from the sensors to the at least one centralized data receiving unit. In Wiley '977, the leads 28 are wires that are generically described and are never referred to as flexible printed circuit cables.

Stopper '315 merely discloses a cable system for a computer and switching mainframe connection system including a flexible printed circuit. Stopper '315 lacks at least one centralized data-receiving unit and a plurality of sensors arranged remotely from the at least one centralized data receiving unit to generate electrical signals of data pertaining to a vehicular collision. In Stopper '315, the flexible printed circuit is not used to interconnect sensors and a data receiving unit to transmit signals of data pertaining to a vehicular collision. As such, there is no suggestion or motivation in the art for combining Wiley '977 and Stopper '315 together.

The present invention sets forth a unique and non-obvious combination of a flexible printed circuit cabling system for a crash test dummy that has flexible printed circuit cables that are much lighter than conventional cables, are more compact such that they can be largely positioned within an internal cavity of the crash test dummy, improves biofidelity, allows more sensors to be used in the crash test dummy, reduces time spent in preparing the test, and makes maneuvering the crash test dummy more convenient. The references, if combinable, fail

to teach or suggest the combination of a flexible printed circuit cabling system for a crash test dummy having at least one centralized data-receiving unit, a plurality of sensors arranged remotely from the at least one centralized data receiving unit to generate electrical signals of data pertaining to a vehicular collision, and a plurality of flexible printed circuit cables electrically interconnecting the sensors and the at least one centralized data receiving unit to transmit the electrical signals from the sensors to the at least one centralized data receiving unit as claimed by Applicant. The Examiner has failed to establish a case of prima facie obviousness. Therefore, it is respectfully submitted that claim 1 and the claims dependent therefrom are allowable over the rejection under 35 U.S.C. § 103.

As to claim 8, independent claim 8 claims the present invention as a crash test dummy that includes a body and a plurality of remote sensors operatively attached to the body and capable of generating electrical signals of data relating to a vehicular collision. The crash test dummy also includes at least one centralized data receiving unit positioned away from the remote sensors and capable of receiving the electrical signals of data relating to a vehicular collision. The crash test dummy further includes a plurality of flexible printed circuit cables electrically interconnecting the remote sensors and the at least one centralized data receiving unit to transmit the electrical signals from the sensors to the at least one centralized data receiving unit.

None of the references cited, either alone or in combination with each other, teaches or suggests the claimed invention of claim 8. Specifically, Wiley '977 merely discloses a test dummy with sensor means, a data receiving and storage means, and leads interconnecting the sensor means and data receiving and storage means. Wiley '977 lacks a crash test dummy having a plurality of flexible printed circuit cables electrically interconnecting remote sensors and at least one centralized data receiving unit to transmit electrical signals from the sensors to the at

least one centralized data receiving unit. In Wiley '977, the leads 28 are wires that are generically described and are never referred to as flexible printed circuit cables.

Stopper '315 merely discloses a cable system for a computer and switching mainframe connection system including a flexible printed circuit. Stopper '315 lacks a crash test dummy having a body, at least one centralized data-receiving unit, and a plurality of remote sensors operatively attached to the body and arranged remotely from the at least one centralized data receiving unit to generate electrical signals of data pertaining to a vehicular collision. In Stopper '315, the flexible printed circuit is not used to interconnect sensors of a crash test dummy body and a data receiving unit to transmit signals of data pertaining to a vehicular collision. As such, there is no suggestion or motivation in the art for combining Wiley '977 and Stopper '315 together.

A rejection based on § 103 must rest on a factual basis, with the facts being interpreted without a hindsight reconstruction of the invention from the prior art. Thus, in the context of an analysis under § 103, it is not sufficient merely to identify one reference that teaches several of the limitations of a claim and another that teaches several limitations of a claim to support a rejection based on obviousness. This is because obviousness is not established by combining the basic disclosures of the prior art to produce the claimed invention absent a teaching or suggestion that the combination be made. Interconnect Planning Corp. v. Fiel, 774 F.2d 1132, 1143, 227 U.S.P.Q. (BNA) 543, 551 (Fed. Cir. 1985); In re Corkhill, 771 F.2d 1496, 1501-02, 226 U.S.P.Q. (BNA) 1005, 1009-10 (Fed. Cir. 1985). The relevant analysis invokes a cornerstone principle of patent law:

> That all elements of an invention may have been old (the normal situation), or some old and some new, or all new, is . . . simply irrelevant. Virtually all inventions are combinations and virtually all are combinations of old elements. Environmental Designs v. Union Oil Co. of Cal., 713 F.2d 693, 698 (Fed. Cir. 1983) (other citations omitted).

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> A patentable invention . . . may result even if the inventor has, in effect, merely combined features, old in the art, for their known purpose without producing anything beyond the results inherent in their use. American Hoist & Derek Co. v. Sowa & Sons, Inc., 220 U.S.P.Q. (BNA) 763, 771 (Fed. Cir. 1984) (emphasis in original, other citations omitted).

As the Court of Appeals for the Federal Circuit recently noted, "[w]hen a rejection depends upon a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references." Ecolochem, Inc. v. Southern Calif. Edison, 56 U.S.P.Q. 2d 1065, 1073 (Fed. Cir. 2000). Here, there is simply no motivation provided in Wiley '977 or Stopper '315 to combine any of their teachings.

The present invention sets forth a unique and non-obvious combination of a crash test dummy that allows for improved measuring of the effects of a vehicular collision. The references, if combinable, fail to teach or suggest the combination of a crash test dummy having a body, a plurality of remote sensors operatively attached to the body and capable of generating electrical signals of data relating to a vehicular collision, at least one centralized data receiving unit positioned away from the remote sensors and capable of receiving the electrical signals of data relating to a vehicular collision, and a plurality of flexible printed circuit cables electrically interconnecting the remote sensors and the at least one centralized data receiving unit to transmit the electrical signals from the sensors to the at least one centralized data receiving unit as claimed by Applicant.

Further, the CAFC has held that "[t]he mere fact that prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification". In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). The Examiner has failed to show how the prior art suggested the desirability of

modification to achieve Applicant's invention. Thus, the Examiner has failed to establish a case of prima facie obviousness. Therefore, it is respectfully submitted that claim 8 and the claims dependent therefrom are allowable over the rejection under 35 U.S.C. § 103.

Obviousness under § 103 is a legal conclusion based on factual evidence (In re Fine, 837 F.2d 1071, 1073, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988), and the subjective opinion of the Examiner as to what is or is not obvious, without evidence in support thereof, does not suffice. Since the Examiner has not provided a sufficient factual basis, which is supportive of his/her position (see In re Warner, 379 F.2d 1011, 1017, 154 U.S.P.Q. 173, 178 (C.C.P.A. 1967), cert. denied, 389 U.S. 1057 (1968)), the rejection of claims 1 through 4 and 8 through 11 is improper. Therefore, it is respectfully submitted that claims 1 through 4 and 8 through 11 are allowable over the rejection under 35 U.S.C. § 103.

Claims 15 and 16 have been added to further define the present invention. Support for claims 15 and 16 can be found in paragraph 24 and in Figures 4 and 6 of the present application. As such, no new matter has been added. It is respectfully submitted that claims 15 and 16 are allowable for the same reasons given to claims 1 and 8.

Based on the above, it is respectfully submitted that the claims are in a condition for allowance, which allowance is solicited.

Respectfully submitted,

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